

The next day, at 1215 hrs, the sky was dark and overcast. With a camera in hand, I sat in the balcony to observe the behaviour of the shikra. The bats started emerging from the dried fronds of the palmyra palm. At the same time, four shikras arrived on the scene, one was a juvenile and the rest were adult. They started chasing the bats, but no capture was seen. This went on till 1510 hrs. Subsequently, rain once again forced

the bats to go back to their roosting site.

This observation, and that of Muni and Hegde (1998), shows that the shikra is a common predator of shortnosed fruit bats.

January 1, 1999 ASHFAQ AHMED ZARRI  
Centre of Wildlife and Ornithology  
Aligarh Muslim University,  
Aligarh 202 002, Uttar Pradesh, India.

#### 10. PREDATORY ATTACK ON BATS BY BARN OWL *TYTO ALBA* AND SHIKRA *ACCIPITER BADIUS* IN TAMIL NADU STATE, SOUTH INDIA

Evidence of predators having a significant effect on bat populations is sparse. Few predators specialize on bats, but the largely anecdotal literature cites many occasional bat-eaters such as monkeys, racoons, opossums, cats, raptors, snakes, frogs, spiders and bats themselves (Altringham 1996). Avian predators such as owls, hawks and falcon are known to attack and feed on bats occasionally (Gillette and Kimbrough 1970). Bats are particularly vulnerable to aerial predators when they leave their roosts or while feeding at night. India is home to about a hundred species of bats, and at least eleven species of avian predators have been observed to prey on bats occasionally in the past (Muni and Hegde 1998). Since July 1995, we have been conducting bat surveys in Nagai district, Tamil Nadu, India (Agoramoorthy and Hsu 1998). We observed three cases of predatory attacks on bats, two by a barn owl *Tyto alba*, and one by a shikra *Accipiter badius*. All three cases were observed in Tirunagiri village which is located near the town of Sirkali in Nagai district.

The first case of predatory attack by shikra was observed during the day near a bat roosting site. In the second and third case, the bats were attacked by barn owl while they were emerging at dusk, and while foraging at night.

**Case 1:** On August 2, 1995 at 1100 hrs, we studied a colony of 250 black-bearded tomb bats *Taphozous melanopogon* located in the

gateway of the Vishnu temple at Tirunagiri village, Nagai district. When a temple worker climbed on to the gateway, some bats flew into darker spots in the temple. Just then, one bat came outside and was immediately captured by a shikra that flew from the top of the temple gateway's exterior and disappeared into the forest with its catch.

**Case 2:** A colony of 400 greater false vampire bats *Megaderma lyra* regularly roosted in an abandoned house at Tirunagiri village. On September 6, 1996, at 1830 hrs, the false vampire bats emerged from their roost. One bat was seen isolated from a group of 20 individuals. Suddenly, a barn owl flew from the roof of the house, stooped 4 m downwards and then flew about 10 m in pursuit of the bat and caught it while the bat was in flight. The owl captured the bat with its beak and claws simultaneously, and apparently swallowed it in flight. The attack lasted about 6-7 seconds. The site where the owl rested earlier was checked, and pellets with skulls and bone remnants of rodents and bats were found.

**Case 3:** On September 26, 1996, at 2130 hrs, a male barn owl was seen resting on a palmyra palm tree *Borassus flabellifer*, about 7 m above the ground at Tirunagiri village. Approximately 10 m away from the owl, about 30 shortnosed fruit bats *Cynopterus sphinx* were flying and feeding on mahua *Madhuca indica* fruit. They were about 4 m above the ground while feeding.

One shortnosed fruit bat moved from the group and came close to the palm tree where the owl was resting. Immediately, the owl swooped and captured the bat in flight and returned to the tree where it had been perching. It rested there with the bat for about 10 seconds, got a firm grasp on the bat with its feet, and flew away. The bat did not produce any screams audible to human ears.

In South Africa, Fenton *et al.* (1994) reported 59 attacks by diurnal raptors on bats and the predators included hobby falcon *Falco subbuteo*, African goshawk *Accipiter tachiro* and Wahlberg's eagle *Aquila wahlbergi*. Similarly in south-eastern Australia, Speakman *et al.* (1994) released bats during daytime to test the predation rates, and observed 11 attacks by diurnal predatory birds. Shortnosed fruit bats *Cynopterus sphinx* usually produced shrill screams when we handled them in mist nets, but the bat attacked by the barn owl did not scream. However, Fenton *et al.* (1994) report that bats taken by raptors uttered screams clearly audible to human ears. Bat bones were seen in owl pellets, and African barn owls *Tyto alba* were reported to attack and

eat individuals of *Rousettus aegyptiacus* (Hill and Smith 1984). Although Speakman (1991) reported that bats made up only a small part of the diet of owls in Britain, Julian and Altringham (1994) predicted that individual owls could take large numbers of bats, and may influence the population size in bat colonies. Only two cases of barn owl predation have been observed during our study, and more data are needed to evaluate whether or not owl predation influences the population size of bats around Tirunagiri village in Nagai district, Tamil Nadu.

February 15, 1999 G. AGORAMOORTHY  
*Bat Conservation Project,*  
*S.M. Govindasamy Nayakkar*  
*Memorial Foundation,*  
*4 Thittai Road, Thenpaty 609 111,*  
*Nagai District, Tamil Nadu, India.*

MINNA J. HSU  
*Department of Biological Sciences,*  
*National Sun Yat-sen University,*  
*Kaohsiung 80424,*  
*Taiwan, Republic of China.*

REFERENCES

- AGORAMOORTHY, G. & M.J. HSU (1998): Occurrence of microchiroptera species in Nagai District of Tamil Nadu State, India. *Zoos' Print* 13(4): 3-4.
- ALTRINGHAM, J.D. (1996): Bats. Biology and Behaviour. Oxford University Press, Oxford.
- FENTON, M.B., I.L. RAUTENBACH, S.E. SMITH, C.M. SWANEPOEL, J. GROSELL & J. VAN (1994): Raptors and bats: threats and opportunities. *Anim. Behav.* 48: 9-18.
- GILLETTE, D.D. & J.D. KIMBOURGH (1970): Chiropteran mortality. In: About bats. Eds. Slaughter, B.H. and D.W. Waiton. Dallas, Southern Methodist University Press, Dallas, pp. 262-281.
- HILL, J.E. & J.D. SMITH (1984): Bats. A Natural History. University of Texas Press, Austin, USA.
- JULIAN, S. & J.D. ALTRINGHAM (1994): Bat predation by a tawny owl. *Naturalist* 119: 49-56.
- MUNI, M. & V. HEGDE (1998): Indian shikra preying on shortnosed fruit bats. *J. Bombay nat. Hist. Soc.* 95(2): 338-339.
- SPEAKMAN, J.R. (1991): The impact of predation by birds on bat populations in the British Isles. *Mammal Rev.* 21: 132-142.
- SPEAKMAN, J.R., L.F. LUMSDEN & G.C. HAYS (1994): Predation rates on bats released to fly during daylight in southeast Australia. *J. Zool., Lond.* 233: 318-321.

11. A NOTE ON SARUS CRANE *GRUS ANTIGONE* MORTALITY  
 DUE TO COLLISION WITH HIGH-TENSION POWER LINES

The sarus crane (*Grus antigone*) is the only resident crane species breeding in India, south

of the Himalayas. Few long term studies have been carried out and information on its mortality